30. (amended once) The method of claim 75 [28] wherein neither strand of the polynucleotide encodes an MHC molecule or a non-MHC molecule involved in antigen presentation.

31. (amended once) The method of claim 75 [28] wherein increases in expression of the MHC molecule and the non-MHC molecule involved in antigen presentation are measured by determining that the mammalian cell's ability to present antigen is increased.

32. (amended once) The method of claim 75 [28] wherein an increase in expression of both MHC Class I and Class II molecules in or on the activated APC is measured.

33 (amended once) The method of claim 75 [28] wherein the double-stranded polynucleotide comes from the mammalian cell's nucleus or mitochondria.

34. (amended once) The immunization method according to claim 74 [27]and further comprising introduction of the activated APC into the host animal.

43. (amended once) The method of claim 1 [2] wherein increasing expression of the MHC molecule by double-stranded polynucleotide is additive to or independent of an interferon-mediated increase in expression of the MHC molecule.

B. New Claims

Claim 47

A method of identifying differential expression of a sequence expressed in response to a double-stranded polynucleotide comprising:

(a) introducing the double-stranded polynucleotide into a mammalian cell;

(b) isolating expressed RNA sequences from the cell treated with the double-stranded polynucleotide and from a cell not treated with the double-stranded polynucleotide; and

(c) comparing the isolated RNA sequences of the treated cell with the untreated cell and identifying the sequences differentially expressed in the treated cell as compared to the untreated cell.

Claim 48

The method of claim 47 wherein the sequence is expressed at a higher level in the double-stranded nucleotide-treated cell than in the untreated cell.

Claim 49

The method of claim 47 wherein the sequence is expressed at a lower level in the double-stranded nucleotide-treated cell than in the untreated cell.

Claim 50

The method of claim 47 wherein the mammalian cell is selected from the group consisting of non-immune cell, immune cell, antigen presenting cell, and thyroid cell.

Claim 51

The method of claim 47 wherein the double-stranded polynucleotide is introduced by a method selected from the group comprising transfection, microinjection, direct injection, viral infection, phagocytosis, oncogene transformation, or cytoplasmic leakage.

Claim 52

The method of claim 47 wherein control cells or cellscells treated with double-stranded polynucleotide are also treated with a drug to prevent changes induced by the double-stranded polynucleotide.

Claim 53

The method of claim 52 wherein the drug is selected from the group consisting of MMI or an MMI derivative.

Claim 54

The method of claim 53 wherein the drug is a tautomeric cyclic thione.

Claim 55

A method of screening for a compound that regulates the effect of double-stranded polynucleotides, comprising:

(a) introducing the double-stranded polynucleotide into a mammalian cell;

(b) exposing or not exposing the cell to the compound before or with or after introducing the double-stranded polynucleotide;

(c) isolating the RNA of the cell;

(d) quantitatively comparing the relative level of expression of double-stranded polynucleotide responsive genes expressed in cell in the presence or absence of the compound; and

(e) identifying and selecting compounds shown to regulate the effect of double-stranded polynucleotides.

Claim 56

The method of claim 55 wherein the double-stranded polynucleotide responsive genes are selected from the group comprising MHC genes, non-MHC genes, and growth-related genes.

Claim 57

A method of screening for a compound that regulates the effect of double-stranded polynucleotides, comprising:

(a) transfecting a non-professional immune cell with an antigen before or after introducing into the cell a double-stranded polynucleotide;

(b) immunizing an animal with the cell to induce an autoimmune disease;

(c) treating the animal with a compound; and

(d) determining whether the compound regulates the effect of the double-stranded polynucleotide.

Claim 58

The method of claim 57 wherein the method of determining whether the compound regulates the effect of the double-stranded polynucleotide comprises:

(a) exposing or not exposing an animal to the compound;

(b) isolating the RNA of the cell from the relevant tissues;

(c) quantitatively comparing the relative level of expression of double-stranded polynucleotide responsive genes expressed in cell in the presence or absence of the compound; and

(d) identifying and selecting compounds shown to regulate the effect of double-stranded polynucleotides.

Claim 59

The method of claim 57 wherein the method of determining whether the compound regulates the effect of the double-stranded polynucleotide comprises:

(a) exposing or not exposing the animal to the compound; and

(b) identifying and selecting compounds shown to prevent or alleviate the symptoms of the disease.

Claim 60

A method for treating a mammalian disease which is sensitive to immunotherapy which comprises:

(a) removing diseased cells from a mammal;

(b) introducing a double-stranded polynucleotide into the cells;

(c) killing the cells; and

(d) immunizing the mammal with the an effective amount of the cells to prevent or alleviate the symptoms of the disease.

Claim 61

The method according to claim 60 wherein the disease is cancer.

Claim 62

The method of claim 61 wherein the method of treatment is used as an adjuvant to other treatment methods.

Claim 63

The method according to claim 60 wherein the disease is an intracellular infection caused by a virus, bacteria, yeast or protozoa.

Claim 64

The method of claim 63 wherein the method of treatment is used as an adjuvant to other treatment methods.

Claim 65

The method according to claim 60 wherein the disease is caused by environmental injury.

Claim 66

The method of claim 65 wherein the method of treatment is used as an adjuvant to other treatment methods.

Claim 67

A method to assess viral replication which comprises:

(a) measuring the level of expression of a gene, the expression of which is affected by transfection with double-stranded polynucleotides, and

(b) comparing the level of expression with cells which are known to not have been infected with the virus.

Claim 68

The method of claim 67 wherein the virus is single-stranded RNA virus.

Claim 69

The method of claim 68 wherein the virus is Hepatitis C or Hepatitis A.

Claim 70

The method of claim 67 wherein the genes are selected from the group comprising MHC class I, MHC class II, TAP-1, TAP-2, HLA-DM, Ii, CIITA, RFX5, MAPK, NF- B, -IFN, JAK, STAT family of kinases.

Claim 71

The method of claim 67 or 69 wherein the cells are transfected by single-stranded RNA from a virus.

Claim 72

The method of claim 67 wherein a drug is added to prevent gene expression induced by a virus during the preparation procedure.

Claim 73

The method of claim 72 wherein the drug is selected from a group consisting of MMI or MMI derivative or a tautomeric cyclic thione.

Claim 74

A method for increasing presentation of antigen by a cell derived from a host organism comprising:

a) introducing a double-stranded polynucleotide into the mammalian cell;

b) increasing the mammalian cell's ability to present antigen and forming an activated antigen presenting cell (APC); and

c) measuring increases in expression of at least one major histocompatibility complex (MHC) molecule in or on the activated APC, and of at least one non-MHC molecule involved in antigen presentation in or on the activated APC.

Claim 75

The method of claims 26 or 74 wherein the cell is a tumor cell and the immunized host organism has an increased ability to recognize and kill the tumor cell.

C. Closing

The claims have been amended to clarify the claim language and to more particularly points out the invention. No new matter has been added. An early allowance is respectfully requested.

Respectfully submitted,

Gerard P. Norton
Reg. No. 36,621
Attorney for Applicant(s)

MAILING ADDRESS
ROGERS & WELLS L.L.P.
200 Park Avenue
New York, NY 10166
Telephone: (212) 878-3148